PAUL, WEISS, RIFKIND, WHARTON & GARRISON

1615 L STREET, NW
TELEPHONE (202) 223-7300

WASHINGTON, DC 20036-5694
FACSIMILE (202) 223-7420

1285 AVENUE OF THE AMERICAS
NEW YORK, NY 10019-6064
TELEPHONE (212) 373-3000
FACSIMILE (212) 757-3990

199, BOULEVARD SAINT-GERMAIN
75007 PARIS, FRANCE
TELEPHONE (33-1) 45.49.33.85
FACSIMILE (33-1) 42.22.64.38

AKASAKA TWIN TOWER
17-22, AKASAKA 2-CHOME
MINATO-KU, TOKYO 107, JAPAN
TELEPHONE (81-3) 3505-0291
FACSIMILE (81-3) 3505-4540

SUITE 1910 SCITE TOWER
22 JIANGUOMENWAI DAJIE
BEIJING, 100004
PEOPLE'S REPUBLIC OF CHINA
TELEPHONE (86-1) 5123628-30
FACSIMILE (86-1) 5123631

13TH FLOOR, HONG KONG CLUB BUILDING
3A CHATER ROAD, CENTRAL
HONG KONG
TELEPHONE (852) 536-9933
FACSIMILE (852) 536-9622

WRITER'S DIRECT DIAL NUMBER
(202) 223-7332

EX PARTE OR LATE FILED

DOCKET FILE COPY ORIGINAL

October 26, 1994

VIA HAND DELIVERY

RECEIVED

OCT 26 1994

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Mr. William Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N.W., Room 222
Washington, D.C. 20554

Re: Ex Parte Presentation in PR Docket No. 92-235

Dear Mr. Caton:

Pursuant to Section 1.1206 of the Commission's rules, this is to inform you that on behalf of NTT America, Inc., the undersigned and Jeffrey H. Olson, Esq., of Paul, Weiss, Rifkind, Wharton & Garrison, along with Mr. Robert Bednarek of Rubin, Bednarek & Associates and Mr. Shingo Ieda of NTT America, Inc. met today with Kathryn S. Hosford of the Private Radio Bureau ("PRC") and members of her staff to discuss several of the issues in PR Docket No. 92-235.

Enclosed herewith for filing with the Commission are two (2) copies of the presentation that was delivered today to Ms. Hosford and other PRB staff members.

Please contact the undersigned if you have any questions.

Respectfully submitted,

Paul J. Kollmer

Paul J. Kollmer

Enclosures

No. of Copies rec'd 0+2
List ABCDE

RZ SSB FOR APCO PROJECT 25

NIPPON TELEGRAPH AND TELEPHONE CORPORATION

OCTOBER, 1994

NTT

TECHNOLOGY DESIGN CONCEPT

(1) INFORMATION SIGNAL BAND-WIDTH FROM 300 Hz TO 3.4 kHz, WHICH IS IDENTICAL TO THE CONVENTIONAL TELEPHONE BAND - WIDTH, CAN BE PROVIDED

(2) DIGITAL AS WELL AS ANALOG SIGNALS CAN BE TRANSMITTED AND RECEIVED WITH HIGH TRANSPARENCY

(3) SEAMLESS INTERFACE WITH SIGNALS COMING FROM THE CONVENTIONAL TELEPHONE LINE WITHOUT ANY ADDITIONAL EQUIPMENT

NTT

BREAKTHROUGH IN SINGLE SIDE-BAND

(1) REAL ZERO (RZ) CONCEPT FOR DE - MODULATION PROCESS

- O DEMODULATE INFORMATION SIGNAL FROM ZERO - CROSSING POINTS OF RZ SSB SIGNAL
  (THIS WAS MATHEMATICALLY STUDIED BY B.F.LOGAN FROM BELL LABS; BSTJ, 56, 4, P.487, 1977)

(2) ANTI - FADING TECHNOLOGY EFFECTIVE FOR DIGITAL AS WELL AS ANALOG SIGNALS

- O TWO - BRANCH EQUAL GAIN COMBINING DIVERSITY RECEPTION
- O RANDOM FM NOISE CANCELLER

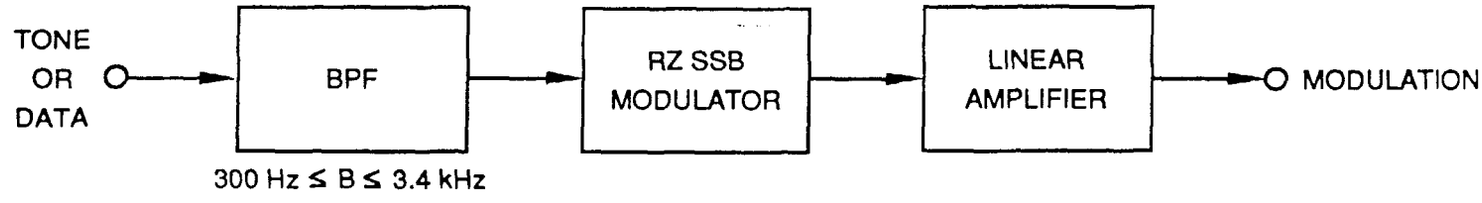
NTT

VERSATILE SERVICE MENU

(1) ANALOG VOICE	: NATURAL SOUND : GRACEFUL DEGRADATION
(2) DIGITAL VOICE	: CLEAR BUT ARTIFICIAL SOUND : ABRUPT SILENCE BELOW BER THRESHOLD : SUPPORTS DIFFERENT CODECS SUCH AS VOCODER, VSELP, PSI - CELP, ETC.
(3) GROUP 3 FACSIMILE	: DIRECT INTERCONNECTION : SPREAD OF 9.2 MILLION EQUIPMENT IN U.S.
(4) DIGITAL DATA	: UP TO 19.2 kbps USING VOICE - BAND MODEM EVEN IN FADING

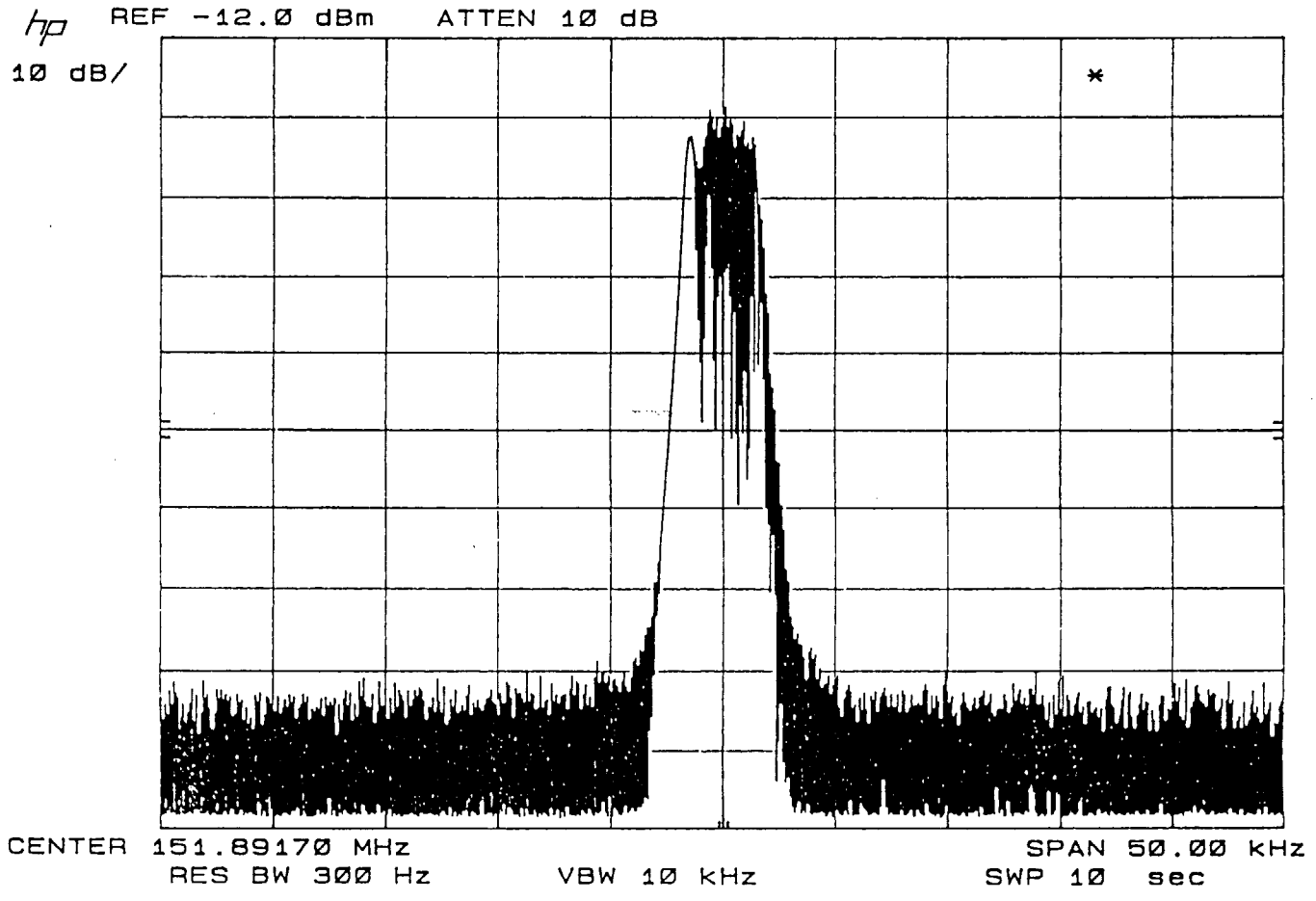
NTT

RZ SSB TRANSMITTER



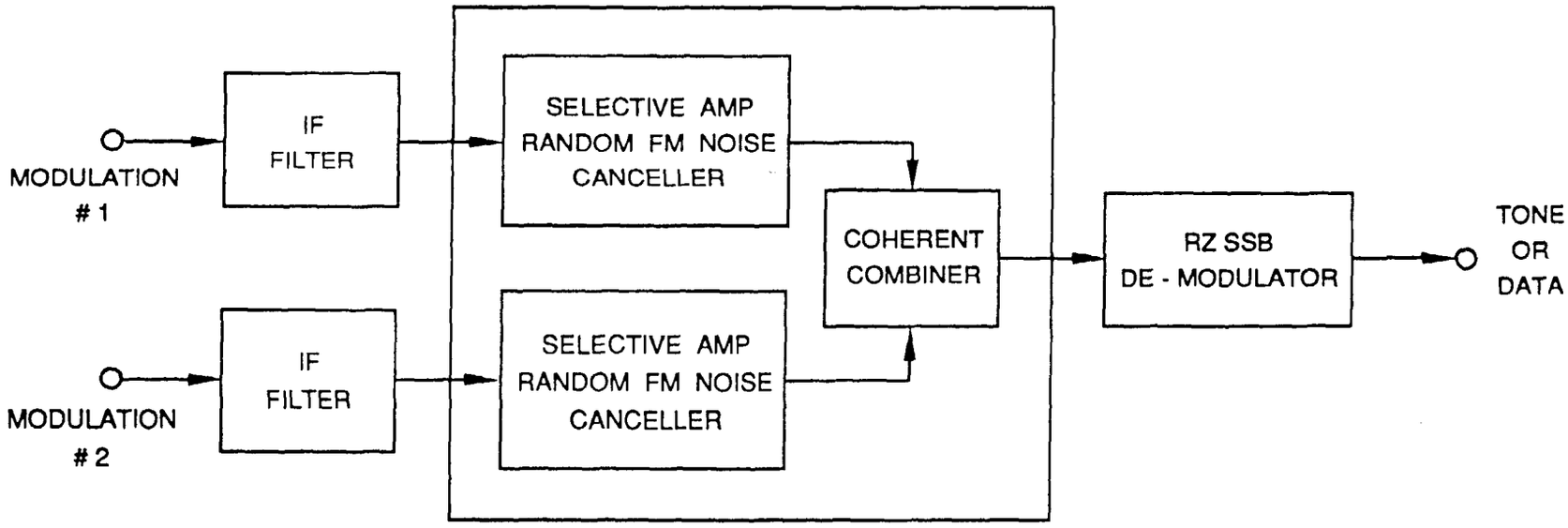
NTT

RZ SSB SPECTRUM MODULATED BY 16-QAM WITH 9.6 kbps



NTT

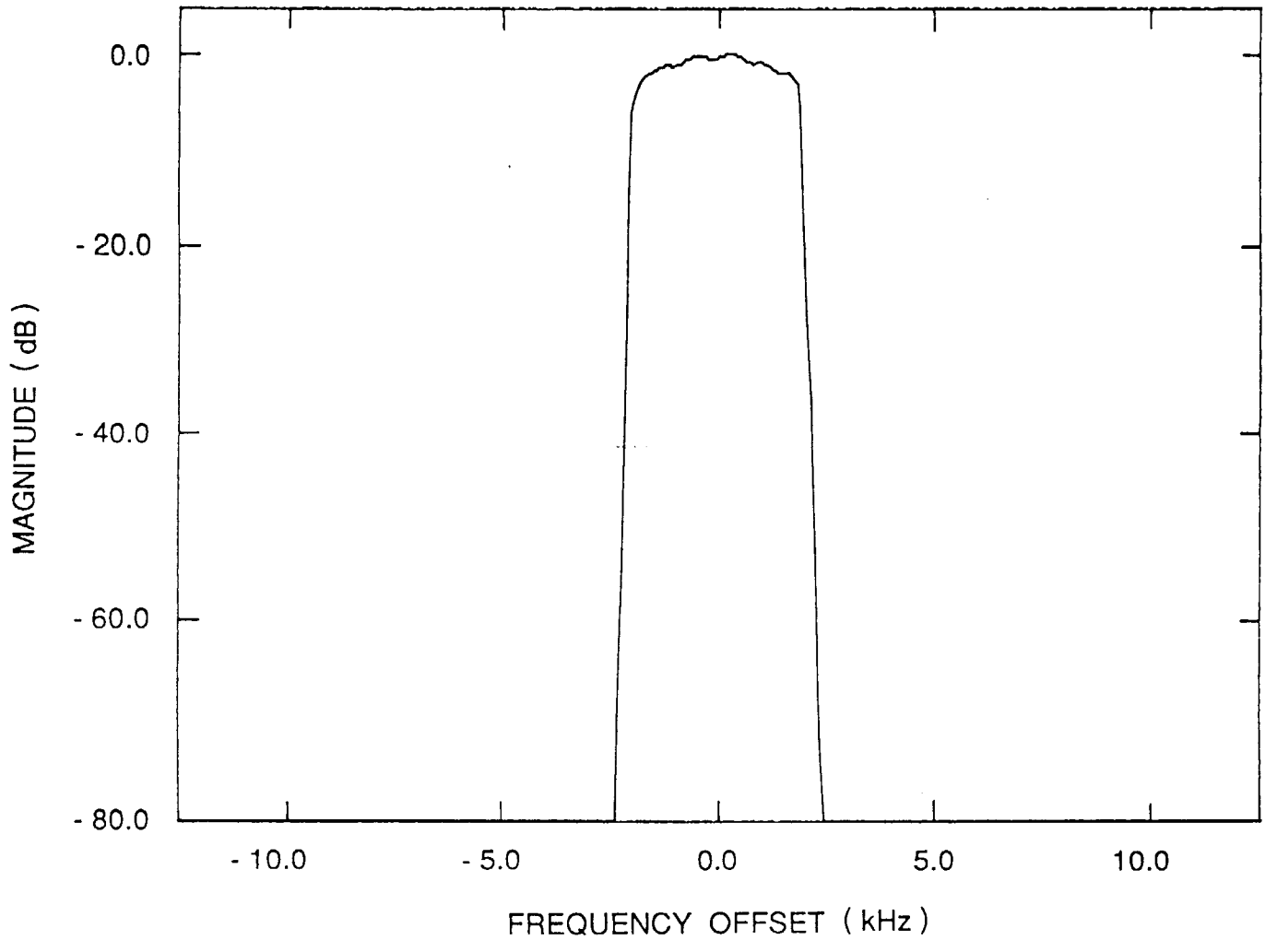
RZ SSB RECEIVER



EQUAL GAIN COMBINING DIVERSITY

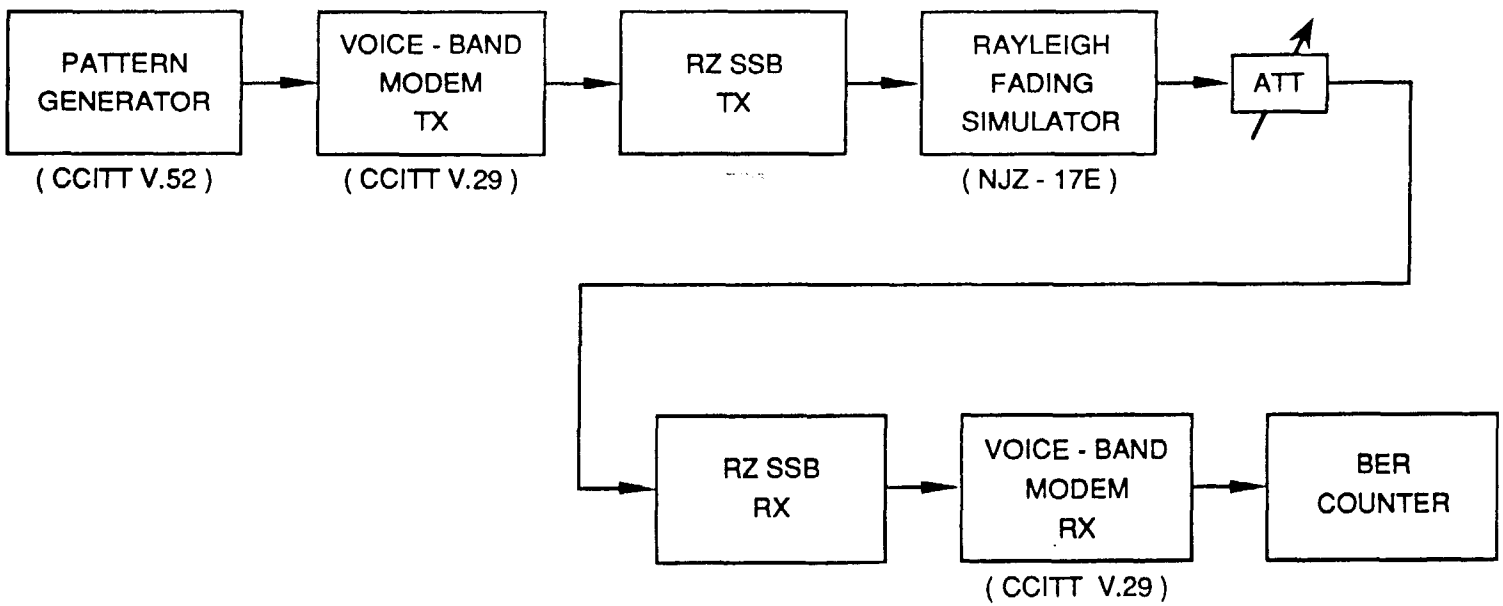
NTT

MEASURED IF FILTER RESPONSE



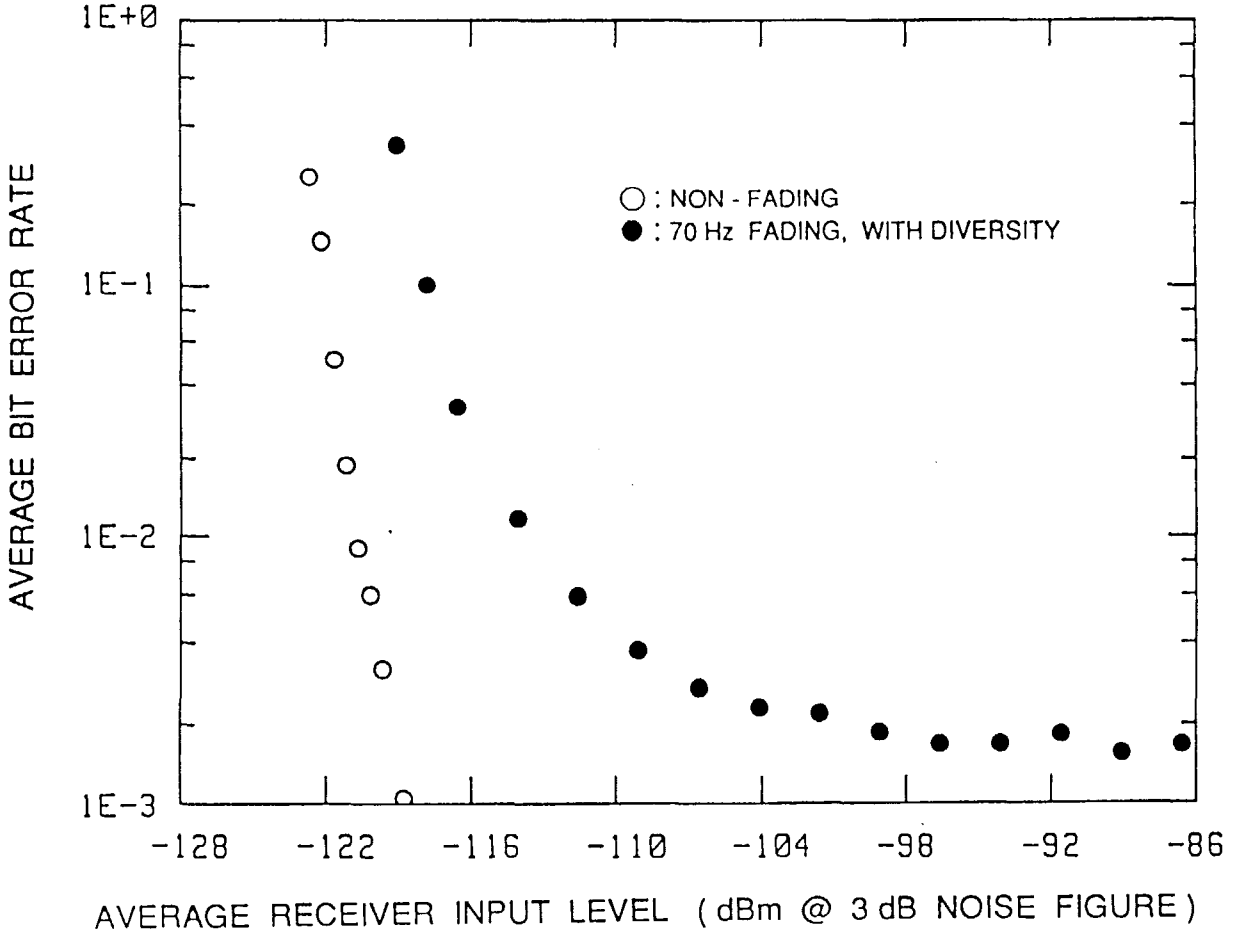
NTT

BER MEASUREMENT EQUIPMENT SETUP



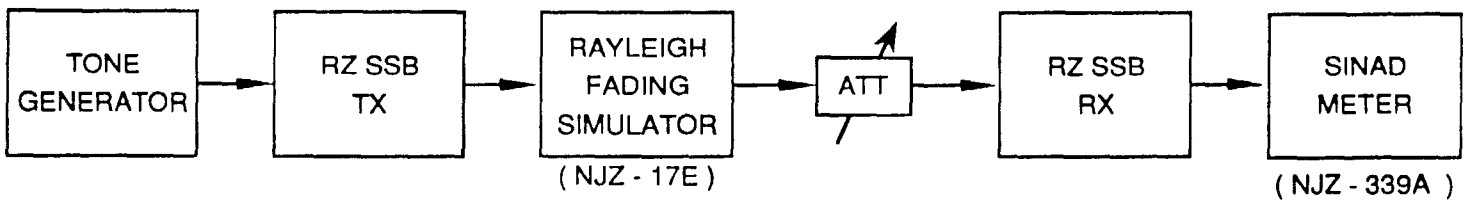
NTT

AVERAGE BER FOR 9.6 kbps DATA



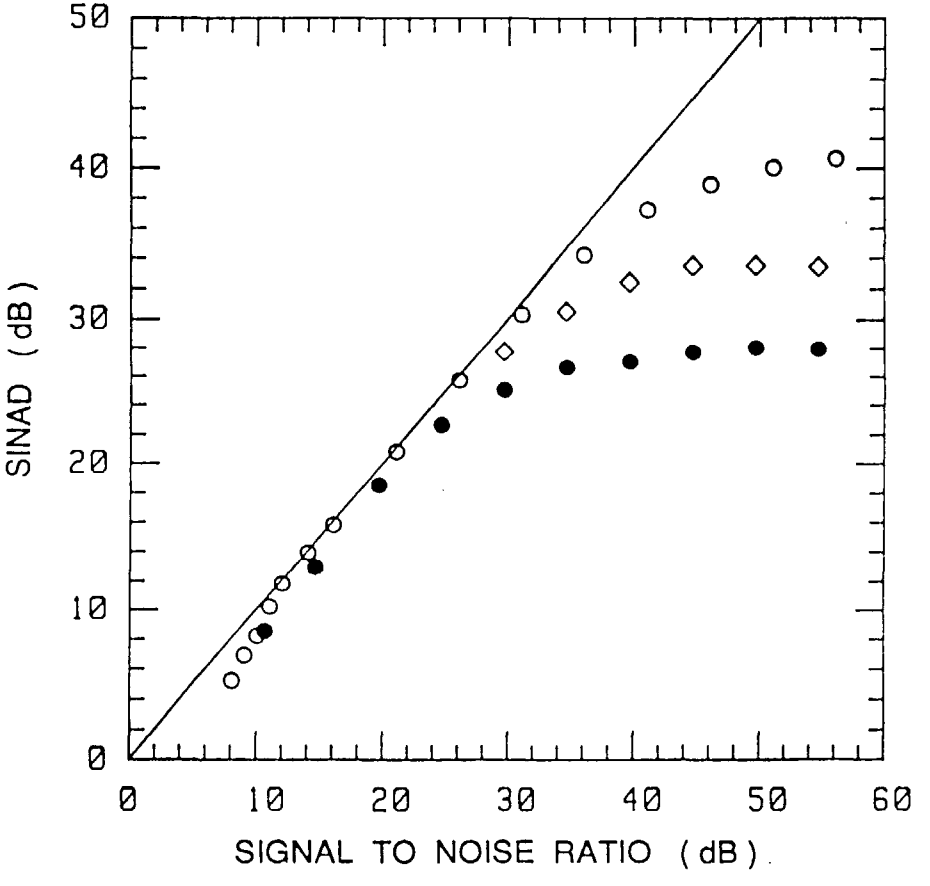
NTT

SINAD MEASUREMENT EQUIPMENT SETUP



NTT

SINAD VS. SIGNAL TO NOISE RATIO

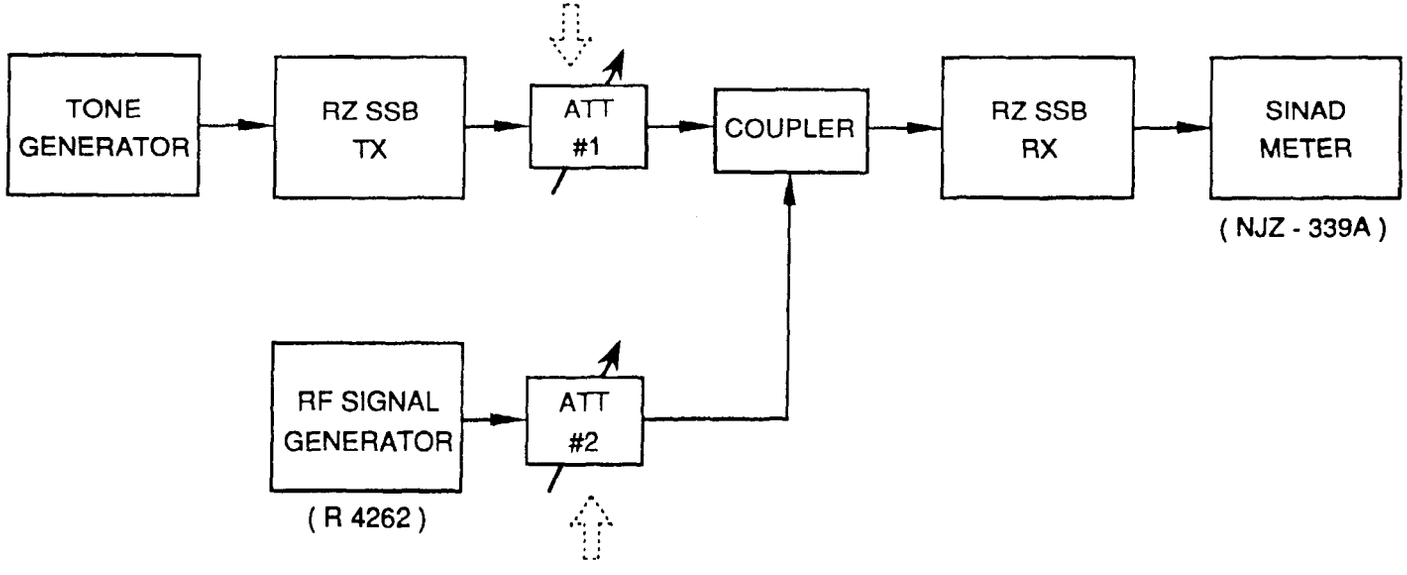


○ : NON - FADING
◇ : 40 Hz FADING, WITH DIVERSITY
● : 70 Hz FADING, WITH DIVERSITY

NTT

SELECTIVITY MEASUREMENT EQUIPMENT SETUP

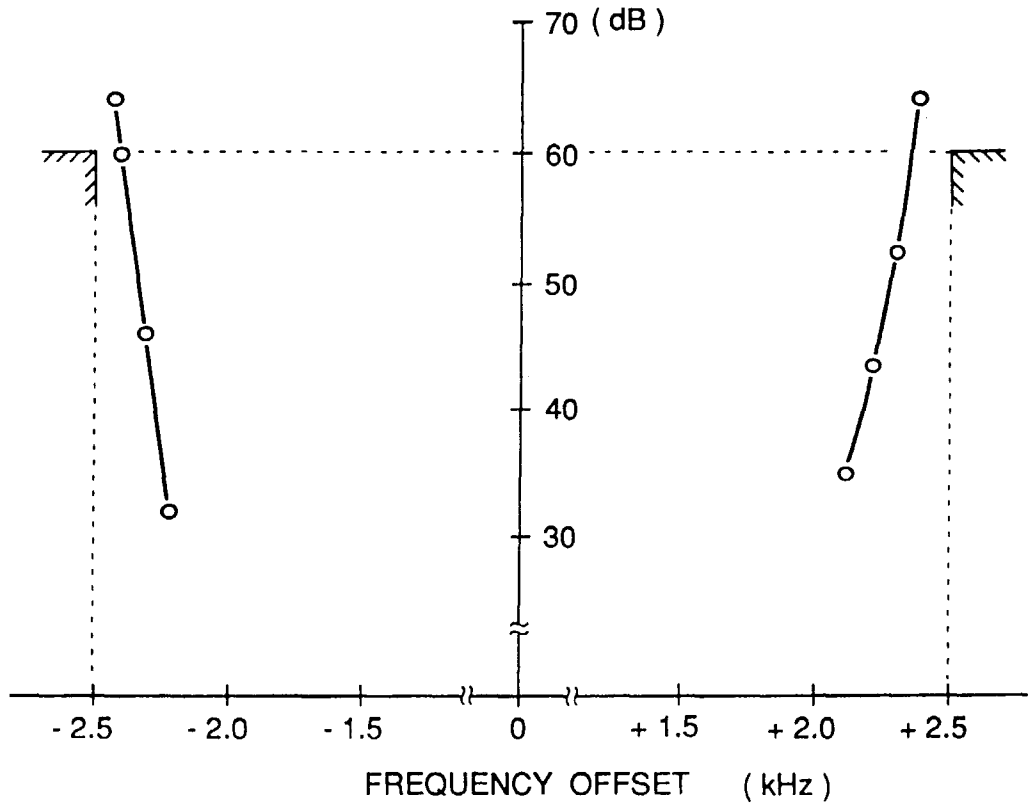
1. *SET LEVEL FOR **12 dB** SINAD WITH NO INTERFERENCE - NOTE LEVEL*
2. *INCREASE LEVEL BY **3 dB***



3. *APPLY LEVEL OF INTERFERENCE UNTIL **12 dB** SINAD IS REACHED AGAIN*
   IEC STANDARD (PUBLICATION 489 - 5, 1987)

NTT

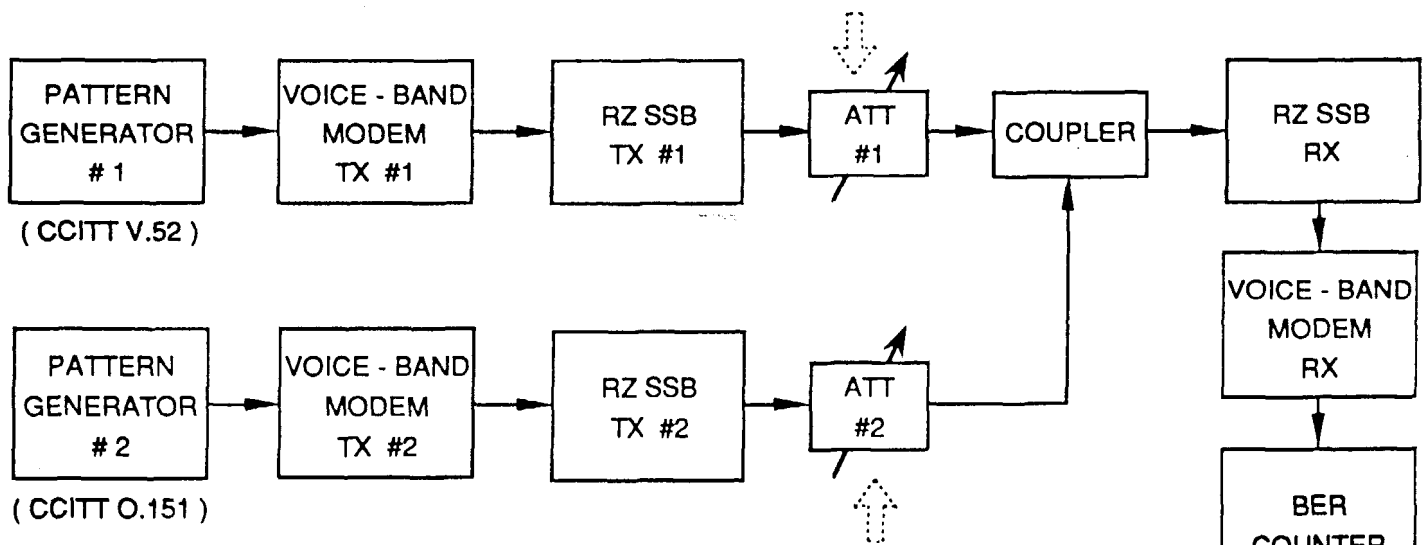
SELECTIVITY, MEASURED BY TONE SIGNAL



NTT

COCHANNEL INTERFERENCE PROTECTION RATIO MEASUREMENT EQUIPMENT SETUP - RADIO SYSTEM

1. SET LEVEL FOR **1 %** BER WITH NO INTERFERENCE - NOTE LEVEL
2. INCREASE LEVEL BY **30 dB**

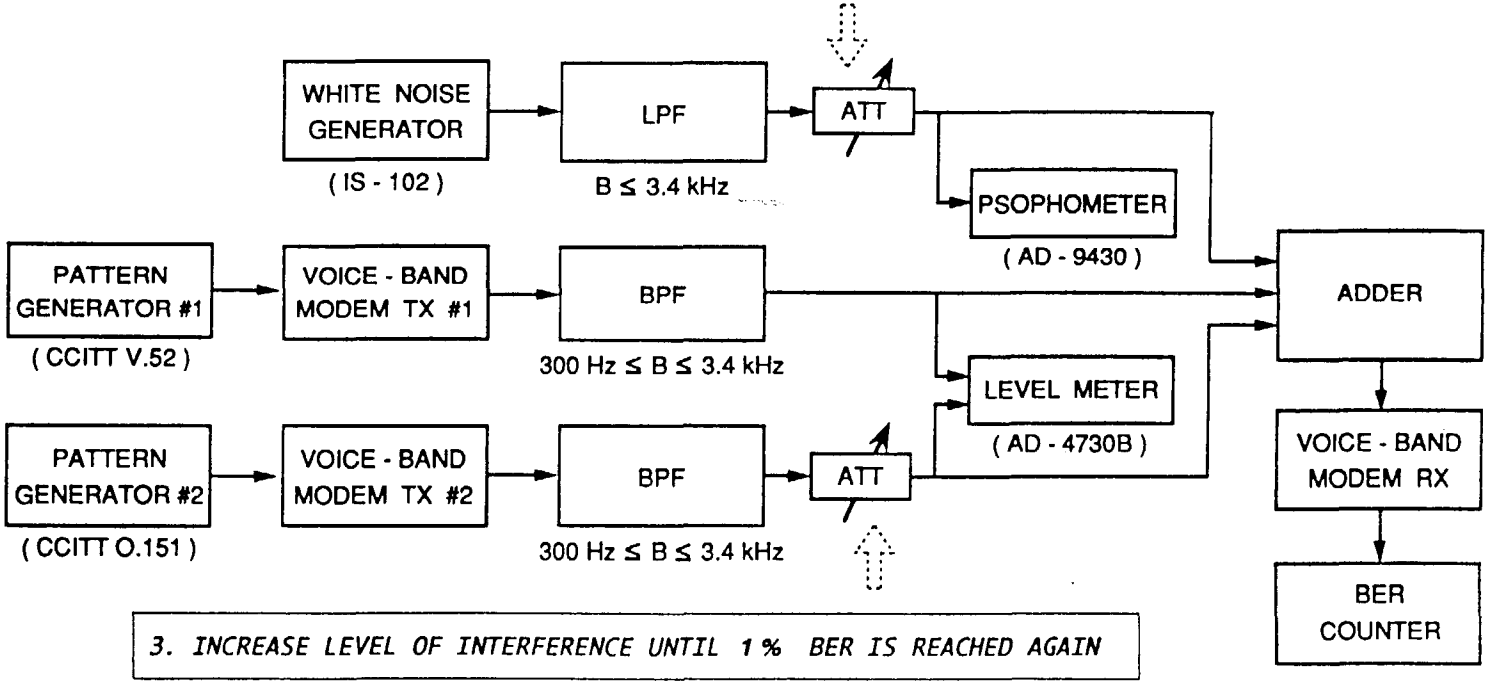


3. INCREASE LEVEL OF INTERFERENCE UNTIL **1 %** BER IS REACHED AGAIN
   RCR STANDARD (RCR STD - 27B)

NTT

COCHANNEL INTERFERENCE PROTECTION RATIO MEASUREMENT EQUIPMENT SETUP - WIRED SYSTEM

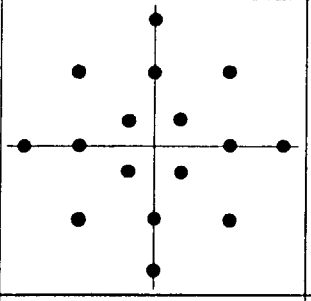
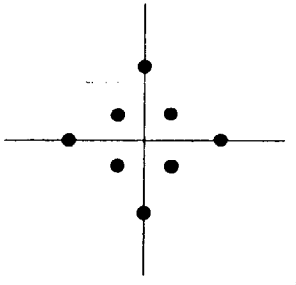
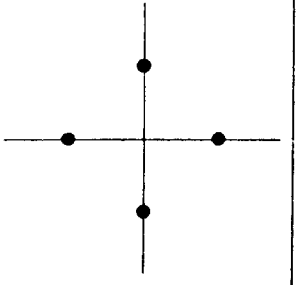
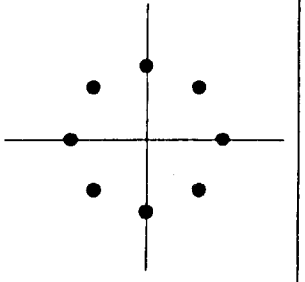
1. SET NOISE LEVEL FOR 1 % BER WITHOUT INTERFERENCE
2. DECREASE NOISE LEVEL BY 30 dB



3. INCREASE LEVEL OF INTERFERENCE UNTIL 1 % BER IS REACHED AGAIN

NTT

COCHANNEL INTERFERENCE PROTECTION RATIO AND SIGNAL TO NOISE RATIO FOR VARIOUS VOICE - BAND MODEM SIGNALS

BIT RATE (kbps)		9.6	7.2	4.8	
MODULATION METHOD		16 - QAM	8 - QAM	4 - QAM	8 - PSK
SIGNAL CONSTELLATION					
CIPR FOR 1 % BER (dB)	RADIO	17.7	14.7	10.3	14.5
	WIRE	16.8	13.2	9.1	14.8
SNR FOR 1 % BER (dB)	RADIO	17.4	14.2	10.2	13.8
	WIRE	16.4	13.1	9.1	13.5

NTT

KEY DESIGN ISSUES WITH NARROW BAND RADIOS

ISSUE	SOLUTION
(1) AMPLIFIER LINEARITY	: CARTESIAN FEEDBACK PA
(2) FREQUENCY STABILITY	: DIGITAL TCXO

NTT

SUMMARY OF RZ SSB TECHNOLOGY

(1) PROVIDES WIDE RANGE OF CHANNEL TRAFFIC TO USERS

(2) TECHNOLOGY APPLICABLE TO TDD SYSTEM

(3) PROVIDES TRANSPARENT CHANNEL EVEN IN FADING

(4) FIELD - TESTED TECHNOLGOY

(5) ALL NECESSARY DEVICES EXIST

(6) TECHNOLOGY APPLICABLE TO PORTABLE UNIT

NTT